

## **POLYPEPTIDES FOR STIMULATION OF IMMUNE RESPONSE (ADJUVANTS)**

### **SUMMARY**

Researchers at the National Cancer Institute, Laboratory of Molecular Immunoregulation developed compositions and methods for using HMGN and its derivatives as immunoadjuvants with microbial or tumor antigens. The National Cancer Institute, Laboratory of Molecular Immunoregulation seeks parties interested in collaborative research to co-develop polypeptides or antagonists for immune response regulation.

### **REFERENCE NUMBER**

E-185-2008

### **PRODUCT TYPE**

- Therapeutics

### **KEYWORDS**

- immunoadjuvant
- immune response
- vaccine adjuvant
- HMGN
- polypeptides
- autoimmune

### **COLLABORATION OPPORTUNITY**

This invention is available for licensing and co-development.

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### **DESCRIPTION OF TECHNOLOGY**

HMGN polypeptides belong to the high mobility group (HMG) family of chromosomal binding peptides. HMGN polypeptides typically function inside the cell nucleus to bind to DNA and nucleosomes and regulate the transcription of various genes. HMGN polypeptides also can be released by peripheral blood mononuclear cells. However, the extracellular release of a HMGN polypeptide initiates activation of the immune system. Therefore, it has potential use as a biological therapeutic for stimulating an immune response. Therefore, HMGN has potential use as a clinically effective immunoadjuvant for use in vaccines

against tumors and many intracellular pathogens.

Researchers at the National Cancer Institute, [Laboratory of Molecular Immunoregulation](#) developed compositions and methods for using HMGN and its derivatives as immunoadjuvants with microbial or tumor antigens. HMGN can be fused to an antigen gene to produce recombinant fusion proteins or can be administered as a DNA vaccine. Alternatively, HMGN could be exploited as a drug target to treat parasitic infections, inflammatory or autoimmune diseases.

### POTENTIAL COMMERCIAL APPLICATIONS

- Immunostimulatory adjuvant to increase efficacy of vaccinations against microbes or cancer
- Attractant or activator of dendritic cells
- HMGN antagonists to suppress inflammatory immune response

### COMPETITIVE ADVANTAGES

- Expected to have diminished adverse effects compared to currently available technologies
- Enables dendritic cells to induce enduring cellular immunity
- More selective for Th-1 type immunity allowing for a more controlled immune response.

### INVENTOR(S)

[De Yang \(NCI\)](#), Joost Oppenheim (NCI), Michael Bustin (NCI)

### DEVELOPMENT STAGE

- Pre-clinical (in vivo)

### PUBLICATIONS

Yang, D. *et al.* High-mobility group nucleosome-binding protein 1 acts as an alarmin and is critical for lipopolysaccharide-induced immune responses. *J Exp Med.* 2012; 209(1): 157-71 [[PMID 22184635](#)]

### PATENT STATUS

- **U.S. Filed:** US Patent No. 8,227,417 (24 July 2012); US Application No. 61/083,781 (25 July 2008); US Application 13/533,492 (26 June 2012)

### THERAPEUTIC AREA

- Immune System and Inflammation